now apears to be too feebly separable from *Microseris*, the binomial goes back to the form *Microseris borealis* (Bong.) Sch. Bip.

c. When a variety has been raised to specific rank, and the original varietal name has been retained for the new species, as is generally the custom (though not obligatory—v. Art. 47 of the Code), the name of the original author of the variety is written in parentheses. Examples: *Dodecatheon integrifolium* Michx. var. *vulgare* Hook., when raised to a species, becomes *Dodecatheon vulgare* (Hook.) Piper. *Phlox caespitosa* Nutt. var. *condensata* Gray, when raised to specific rank, becomes *Phlox condensata* (Gray) E. Nels. But *Festuca ovina* L. var. *ingrata Hack.*, since the varietal name was not retained for the species, becomes simply *Festuca idahoensis* Elmer, according to Art. 47 cited above.

V. Names of Varieties (and Subspecies).

a. When a variety of one species is transferred to another species without losing its rank as a variety, the name of the original author is retained in parentheses. Example: *Lysimachia stricta* Ait. var. *ovata* Rand & Redfield, when transferred to *L. terrestris*, becomes *Lysimachia terrestris* (L.) BSP. var. *ovata* (Rand & Redfield) Fernald. *Dodecatheon Hendersonii* Gray var. *leptophyllum* Suks. becomes *Dodecatheon conjugens* Greene var. *leptophyllum* (Suks.) Piper.

b. When a species is reduced to a variety, if the specific name is retained for the variety, the original author of the species is indicated in parentheses. Examples: *Mentha borealis* Michx., when reduced to a variety of *M. canadensis*, becomes *Mentha canadensis* L. var. *borealis* (Michx.) Piper. *Polygonum incanum* Schmidt becomes *Polygonum lapathifolium* L. var. *incanum* (Schmidt) Koch. But *Elymus mollis* Trin. becomes *Elymus arenarius* L. var. *villosus* E. Mey. under Art. 47 of the Code as above.

VI. Names of Sub-varieties and Formae.

The same rules as laid down in IV and V, are applicable to names of sub-varieties, *formae*, &c., wherever these are recognized.

Salem, Oregon, 1922.

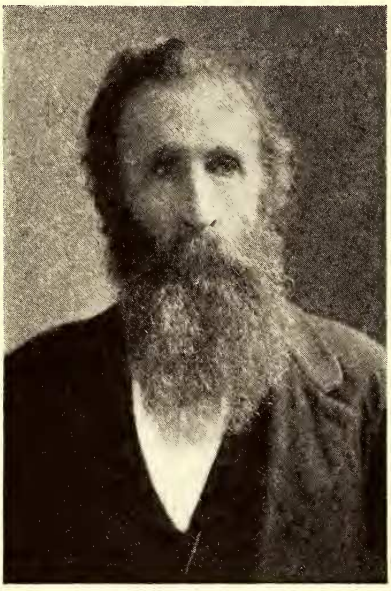
THE BOTANICAL EXPLORERS OF CALIFORNIA.—VIII

Willis Linn Jepson

William G. W. Harford

Born at Rochester, New York on December 30, 1825 and educated in the public schools of his native town, William G. W. Harford came to California in 1853 and, as in the case of a number of California pioneers fell under the influence of Dr. Albert Kellogg and became a convert to natural science. From a very early day he was connected directly with the work of the California Academy of Sciences, an association which continued with one or two interruptions until his death. While Harford was primarily a conchologist, his interest in the native plants was strong and continually strengthened by his association with Dr. Kellogg. In 1868 and 1869 these two men distributed large and valuable sets of California and Oregon plants to various of the important herbaria.

The Academy records, due to the great earthquake of 1906, are imperfect, but we know that Mr. Harford was Curator of Conchology in the years 1867, 1868, 1874 and 1875 and that he was Director of the Museum from 1876 to 1886. During the early years of the Academy everyone served without pay, but at a later time Harford received a small salary. At the time of the first political upheaval in the Academy, largely engineered by Mrs. Mary K. Curran, by which Professor George Davidson, Superintendent of the United States Coast and Geodetic Survey, was displaced as President by Dr. H. W. Harkness, Harford was one of those who lost his position. The next four years he spent as an assistant to J. J. Rivers, Curator of the Museum at the University of California. From a very early day he made his home in the city of Alameda and at his old time home, 1174 Regent street, he died on March 1, 1911.



W. G. W. Harford

Of Harford's collecting expeditions little is now known. He will be long remembered as the friend and protector of the gentle Kellogg, especially in Kellogg's later years. Even more shy and unobtrusive than Kellogg, he was like him in simplicity of manner, in love of the beautiful, in his deeply religious nature. In 1886 Greene and Parry dedicated to him the genus Harfordia, endemic in Lower California, a genus which includes two species of plants of the Eriogoneae that had previously been referred to Pterostegia.

Thomas Bridges

In the southern Sierra Nevada one finds a handsome Pentstemon on rocky outcrops which was named Pentstemon Bridgesii by Asa Gray after Thomas Bridges who collected it in "gold days". Probably he was the first to collect it. A common and widely distributed species, it is a feature of the Yosemite region; it flourishes on the Kaweah River watershed; between Huntington Lake and Florence Lake, in seams of the rocky slopes running down to the South Fork San Joaquin River, it hangs its clusters of scarlet flowers over the glaring white granite ledges, the most brilliant flashes of color in evidence in August.

Bridges was an English collector, who made a collection of plants in California between 1856 and 1865. After Bridges' death what remained of his California collection was donated by his widow to the Smithsonian Institution and was distributed under the direction of the

United States National Herbarium. On account of the fact that his plants are frequently cited and that a few are the types of new species, it would be desirable to have a record of his collecting places in California. In the Transactions of the Botanical Society of Edinburgh (8:434-435,—1866) is a notice of his work in California and brief reference to his collections in the "Mariposa mountains" (meaning Mariposa County) and the "Coast Range". In the Proceedings of the Zoological Society of London are two papers which have to do with two communications made by Bridges to the society. One of these is a "List of Birds collected by Mr. Thomas Bridges . . . . in the Valley of San Jose" (25: 125-126,—1857). The other is a paper by Bridges, "Notes on California Birds" (26:1-3,—1858), which shows that as a collector he had been in Yosemite Valley, the Santa Cruz Mountains, the Trinity Mountains, the Scott Mountains of Trinity County, Trinity Valley, and at Mt. Shasta.

This is apparently all that has been known save for his journey to Silver Mountain. One of the very early emigrant train routes over the Sierra Nevada surmounted the chain by a wagon trail along the East Fork Carson River to Ebbetts Pass, thence through Hermit Valley, descending to the Sacramento Valley on the west slope by way of the Calaveras Big Trees. A few miles off this emigrant trail on the east slope silver mines were discovered about 1860, resulting a little later in a characteristic mining excitement and the settlement of the mining town of Silver Mountain. Many travelers in early day California, as well as miners, took in Silver Mountain during the sixties. It was then one of the places to visit. so thither went Bridges in 1863. On the trail he was met by W. H. Brewer of the California Geological Survey, who records in his journal (Up and Down California, 432,—1930) his delight in meeting another botanist.

In the Sir William Hooker Correspondence at the Royal Botanic Gardens, Kew, England, there are preserved the letters written by Bridges to Sir William. One of these letters contains considerable information relating to Bridges' field movements in California and is therefore here presented in full. The footnotes to the letter in each case are inserted by the writer of this article.

San Francisco. May 5. 1858.

Sir W. J. Hooker
Royal Gardens,
Kew.

My Dear Sir William:

By the last mail enclosed in Mr. Cuming's letter I received your kind note written to him dated Feb. 26th. I now beg leave to answer your question—to know if it was my intention to remain in California. Permit me to say in reply that I am so delighted with the climate and interested in the Natural History of the country that I have neither intention nor desire to leave it and so long as I remain here I shall continue to collect specimens of Plants, Seeds, Birds, Quadrupeds and in fact any subjects of Natural History as time and opportunities will permit me to do so. I can scarcely describe to you how pleasing and

gratifying it has been to me to learn that in my collections you have found some new and rare plants—I was partially under the impression that from the labours of Douglas, Hartweg, Jeffrey, Lobb and other travelers from Europe with the many United States Exploring Expeditions that little or nothing remained to be discovered and only gleanings were left for those of the present day.—Although it is necessary to take into consideration that since the Gold discovery many new and extensive fields are open to the traveler where in former times no one could penetrate with safety from the Indians and other causes.—I am now firmly persuaded that on the summit of the Sierra Nevada there is a fine field for the Botanist in whatever degree of latitude he may direct his attention. This I know from experience as I found a great difference in the plants which I gathered last year in the Mariposa County from those which I collected on Scott's and Trinity Mountains near Yreka towards the borders of Oregon although they were situated about the same elevation viz. from 4-5000 ft. I figure to myself that you must have experienced pleasure when you saw the specimens of the Darlingtonia Californica, Fremontia Californica, Lilium Umquaense? and the singular Sarcodes sanguinea. The later possesses a most extraordinary tuber which I found at the depth of 18 inches from the surface of the soil.—Unfortunately it will not keep so I have doubts if it will ever be cultivated. I found it common under the shade of those magnificent trees Picea grandis[1] and P. amabilis[2] near the summit of the Sierra Nevada in Mariposa County. The noble white Lily which I have numbered 270 and which I suppose is Lilium Umquaense[3] is also a charming plant well worthy of a place with L. lancifolium—it has a most delightful perfume and it will be perfectly hardy, growing high up the slopes of the Sierra Nevada in the Pine forests. Seventy fine bulbs of this plant I lost with many others in that ill-fated steamer the Central America. This summer I hope to be able to replace them. Cupressus Lawsoniana must also have called your attention.—Whilst speaking of this fine tree allow me to ask if there is not great affinity in the cone with Sequoia sempervirens only on a minor scale—the bark of Cupressus Lawsoniana differs from every other California cypress—probably it may be a connecting link between Sequoia and Cupressus.

Now I am aware that you are in possession of my collections I hope you will preserve the nos. and I will shortly forward you a copy of the Catalogue which I made out when I divided the specimens[4]. In it you will find the locality of each plant and I now regret that I did not forward it when I sent the collections. It is similar to the lists of my Chilian Herbarium. Please let me know if you intend to publish the species which may prove new and also in what work.—In the Library of the N. H. Academy[5] of California I find a copy of the Botany of Captn. Beechey's Voyage which has given me much information

[1]Abies concolor Lindl. & Gord. [2]Abies magnifica Murr. [3]Lilium Washingtonianum Kell.

[4]This catalogue appears never to have been sent. [5]Natural History Academy. that is California Academy of Sciences.

on the plants of this country and a friend here also possesses Hartweg's plants[6]. In the Library are also found many of the works of Dr. Torrey of the U. States.—Thus gradually I am becoming acquainted with the Flora of California.

A few days since I returned from a month's excursion in the mountains along the coast, Santa Clara County 50 miles south of San Francisco—During . . . . I have made additions to my herbarium but birds and quadrupeds called most my attention.—By this mail I have forwarded to Mr. Cuming a very interesting collection. Nevertheless I never omit making specimens of Plants when I find any that I did not procure last season. I am in hopes that during the summer I shall be able to collect from two to three hundred species which I did not possess previously. The Oaks which are very numerous in variety in California have claimed my attention and I have now specimens of several species with the male flowers, although few species are celebrated for timber. They are deserving of a place in Parks and Arboretums on account of the beauty of their growth and foliage.

I should feel much pleasure in complying with any suggestions which you could give me relative to the Botany of this charming country and I should at all times take an interest in fulfilling your instructions. Hoping to have the pleasure of hearing from you.

I remain Sir William
Your Obedt Sernt
Thomas Bridges

Address
Care of W. Lane Booker Esqr.
H. B. M. Consul
San Francisco—California[7]

Thomas Bridges was born at Lilly, Herts, England, on May 22, 1807. For about twenty years he traveled in South America as a collector-naturalist, especially in Bolivia, Peru and Chile. (See Hooker's Journal of Botany 1:177-178). In November, 1856, Bridges came to California and collected on the coast for about eight years. Soon after his arrival in San Francisco he lived in a house on Eleventh street between Market and Mission streets. The material used in this building had all of it been brought from China and the house was therefore called the Chinese House. Later he lived in Oakland. In April, 1865, he sailed for Nicaragua on a collecting expedition, and took passage on the return trip up the coast in the fall, but died at sea November 9, 1865. The captain of the ship, Captain Blethen, was a friend of Bridges and in consequence his body was brought home to California and buried in Lone Mountain Cemetery, San Francisco.

[6] Bentham's Plantae Hartwegianae.

[7] This letter (Hooker Correspondence, vol, 64, no. 17) was copied by the writer in 1905. Through the good offices of the late William Botting Hemsley, Keeper of the Herbarium, permission to print it was obtained from the then Director, Sir William Thiselton-Dyer. Since that time, I have visited the Royal Botanic Gardens in several different years and here desire to record my obligations for many courtesies to the Director, Sir Arthur Hill, and also to the Keeper of the Herbarium, Mr. A. D. Cotton, to the Deputy Keeper, Dr. T. A. Sprague, to the Librarian, Mr. A. S. Skan, and to others of the staff who have assisted me in many ways.

According to the testimony of his friend, Robert E. C. Stearns, at that time associated with him in the California Academy of Sciences, Bridges was extremely modest and unassuming in relation to his travels. He had further an unusually sensitive nature as evidenced by an experience on the Amazon River in South America. While in search of the Victoria regia, which he introduced into England, he saw a very rare monkey that the London Zoological Society was anxious to secure. He shot the female in a tree. She held a young one in her arms and hugged it to her as she fell. It was impossible for Bridges to erase this incident from his mind and he felt, he said, as if he had murdered a human being.

In January, 1847, he was married in Bristol, England.[8] After his marriage he returned to Chile and in 1851 explored Robinson Crusoe's island of Juan Fernandez. While in Chile he suffered severely in a financial way from a flood that destroyed his botanical garden near Valparaiso, and shortly afterwards returned to England, stopping in Panama on the way. Coming to California in 1856, he ranged along the coast as far north as British Columbia but made San Francisco his home. One of the most interesting and distinctive of our ferns, Pellaea Bridgesii, which he discovered, was named for him by Sir William Hooker, as was Silene Bridgesii by Rohrbach. In addition the elegant Brodiaea Bridgesii, was dedicated to him by Sereno Watson, while Watson also first described Lupinus formosus var. Bridgesii. A California paper on his death said of him: "He was a noble-hearted Englishman, without guile or malice, and left a crowd of friends in California." A photograph of him was placed by Dr. Stearns in the archives of the Smithsonian Institution.

[See Britten, J., and Boulger, G. S., Bibliographical Index of British and Irish Botanists, 22 (1893). Hooker's London Journal of Botany, 4:571-577,—1845, a letter from Cochabama, Bolivia, Apr. 3, 1845. Seeman's Journal of Botany, 4:64 (1866). Dall, W. H., Memorial Sketch of Thomas Bridges, F. L. S., F. Z. S. (Proc. Cal. Acad. 3:236-237,—1866). Loudon, Gardeners Magazine, 7:95; 16:116 (1840); it is here said that Bridges had other sources of income than the money derived from the sale of his plants. Merrill, E. D., Philippine Journal of Science, 30:163 (a reference to Bridges). Greene, H. A., in Jepson Correspondence, 24:241 (ms.). Stearns, R. E. C., in Jepson Field Book, 19:38-41 (ms.). Jepson, W. L., Notes on the Bridges letters in the Hooker Correspondence (Jepson Field Book, 15:8-21, ms.); the Hooker Correspondence contains eighteen letters of Bridges from Chile, mostly written at Valparaiso. A paper by Bridges, Coniferes de Californie, I have never been able to see or trace to its place of publication.]

[8] According to W. H. Dall (Proc. Cal. Acad. Sci. 3:236) he was married to Miss Mary Benson, a niece of Hugh Cuming; according to Britten and Boulger (Bibliog. Index Brit. & Irish Botanists, 22) to a daughter of Hugh Cuming. Hugh Cuming is celebrated as a natural history collector in the Philippines; he was also in Chile (cf. Merrill. E. D., Philippine Jour. Sci. vol. 30, no. 2).